

## REMARKS/ARGUMENTS

Claims 1-24 are cancelled. Claims 25-34 were previously withdrawn. Claims 35-54 were previously presented and are currently pending. Claims 22-24, were previously elected without traverse, but are now cancelled. Claims 35 and 49 are currently amended. Claims 42, 43, and 45 – 47 are cancelled.

### RESPONSE TO §103 REJECTIONS

In the Office Action dated September 16, 2008 (“Office Action”), Claims 35-54 were rejected as being *prima facie* obvious in light of Maggiolo, A (US Pat. No. 2,865,937) (“*Maggiolo I*”); Beal, R.E. (US Pat. No. 3,504,038) (“*Beal*”); Sechi, L.A. et al. (Journal of Applied Micro. Bio. 2001) (“*Sechi*”); Maggiolo A. (Journal of the American Oil Chemists’ Society, 1963) (“*Maggiolo II*”); and Herman (US Pat. No. 5,190,979) (“*Herman*”).

When rejecting claims based on obviousness, the Office has the burden to establish a *prima facie* case of obviousness, which includes a “determination whether the claimed invention “as a whole” would have been obvious.” Additionally, MPEP § 2142 states as follows:

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *In re Kahn* stated that “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”

*Id.* (quoting *KSR International Co. v. Teleflex Inc.*, (“*KSR*”) 550 U.S. at –, 82 USPQ2d at 1385,1396).

As discussed in more detail below, Applicants assert that one of ordinary skill in the art could not have combined the claimed elements because the cited references (1) fail to teach or suggest all elements of pending claims, and (2) that the claimed elements in combination are not analogous to the separate elements in the prior art. At the very least, there would not be a motivation to combine these references.

#### 1. Prior art references do not disclose or make obvious all claim elements.

Applicants respectfully submit that the Office Action fails to met its burden to show a *prima facie* case of obviousness at least because the combined prior art references fail to teach or

suggest all the claim limitations. Specifically, the prior art references fail to teach (1) a method utilizing a washing flask and bubbling reactor; (2) a method producing primarily alpha-hydroxi-hydroperoxides; and (3) a reaction performed at 50°C.

**A. Prior art references fail to teach a washing flask, bubbling reactor, and an ozonator.**

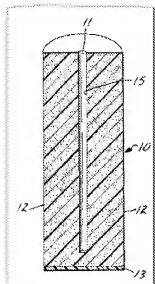
The Office Action suggests that *Herman* teaches the use of a bubbling reactor, washing flask and an ozonator; however, these elements are not literally or implicitly taught by *Herman*. For example, Claim 40 discloses a method “performed in a **bubbling reactor** comprising a **washing flask**, wherein said **washing flask contains water**.” Additionally, Claim 41 depends from Claim 40 and discloses a method “wherein said **washing flask is between said bubbling reactor and an ozonator**.”

The office action cites that *Herman*, “in Example 1” discloses “the use of a bubble reactor.” To the contrary, *Herman* merely discloses that gas “is bubbled through [a] solution via a **glass sparger** at the rate of 5000 cc/min. This simply does not disclose, nor does it make obvious the use of a bubble reactor. Moreover, it certainly does not disclose or make obvious the use of a washing flask, a washing flask comprising water, or a washing flask between a bubble reactor and ozonator.

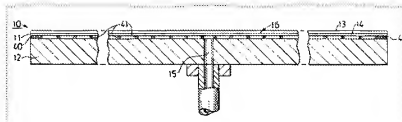
A “sparger” as taught by *Herman* is not analogous to a bubble reactor or any other such device. Instead, a sparger is simply any device that facilitates a gas being injected into a liquid. For example US Patent No. 3,978,176, to Voegeli, entitled “Sparger,” (“*Voegeli*”) teaches that spargers are simply “devices for aeration of fluids” (Column 2, lines 5-6). Similarly, US Patent No. 5,858,283 to Burris, entitled “Sparger,” (“*Burris*”) also suggests that a sparger is “for dispersing small gas bubbles into liquid.”

Examiner is directed to the diagrams below, which are taken from *Voegeli* and *Burris* respectively. These Figures clearly depict devices which simply provide for gas dispersion, and not a device in which a reaction is performed.

**Voegeli, Figure 1**



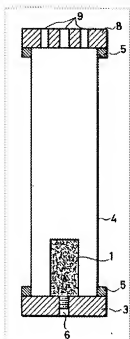
**Burris, Figure 1**



In contrast, ‘bubble reactor’ or ‘bubble column reactor’ refers to a specific device. For example, it may refer to a device wherein a liquid is held in a column, and gas is introduced into the liquid near the bottom of the column. Bubbles travel upward through the column, and gas can collect above the liquid. In some examples, a sparger or similar device may be used to introduce gas to the column.

An exemplary device can be found in US Pat. No. 5,242,643 to Kim et al. entitled “Bubble Column Reactor with Dispersing Devices” (Kim). Here, the “bubble reactor” taught can be clearly distinguished from simply a sparger, which is the only device taught by *Herman*. Examiner is directed to the diagram below which is taken from *Kim*, which depicts an exemplary bubble reactor.

**Kim, Figure 1**



As discussed above, a bubble reactor can clearly be distinguished from a sparger, and in fact, a sparger is at the very least only a portion of a bubble reactor. For example, the structure labeled 1 in the figure above, can be considered analogous to a sparger.

In addition to not disclosing a more complex device such as a bubbling reactor, *Herman* also fails to teach a method “performed in a **bubbling reactor** comprising a **washing flask**, wherein said **washing flask contains water**,” or a method “wherein said **washing flask is between said bubbling reactor and an ozonator**.” Given that *Herman* fails to teach the complexity of a bubbling reactor, *Herman* therefore also fails to disclose additional elements such as a washing flask, a washing flask with water, or a washing flask between a bubble reactor and ozonator.

Moreover, *Herman*, or any other presented prior art does not make such elements obvious to one of ordinary skill in the art. Instead using such devices in the way disclosed in the present application creates **unexpected and synergistic results**. Specifically, the specification of the present application discloses that:

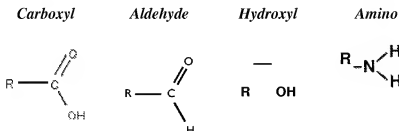
Ozone can be obtained from medicinal oxygen and from air, but to obtain it from air, it is necessary to put a washing flask with distilled water between the ozonizer and the reactor. This single step guarantees the purification of the mixture of gasses from the ozonizer. The introduction of that washing flask is another new feature of this procedure.

Specification, Page 5, Line 33 and Page 6, Lines 1-4.

Accordingly, because *Herman* alone, or in combination with any other references, fails to teach a method “performed in a **bubbling reactor** comprising a **washing flask**, wherein said **washing flask contains water**” or a method “wherein said **washing flask is between said bubbling reactor and an ozonator**, Claims 40 and 41 are therefore not obvious in light of *Herman* alone, or in combination with any other prior art reference. Applicants accordingly request that Claims 40 and 41 be allowed to issue along with any Claims depending therefrom.

**B. Prior art references fail to teach a primarily producing alpha-hydroxyhydroperoxides.**

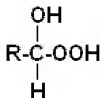
The Office action asserts that *Maggiolo II* discloses production of alpha-hydroxyhydroperoxides. However, *Maggiolo II* simply teaches that it is possible to make a “variety of straight chain products containing one or two functional groups such as ... hydroxyl.” This statement is so general, and is simply equates to a statement that **various** functional groups can be present in reactions products. For example, Examiner is directed to the figures below, which depict carboxyl, aldehyde, hydroxyl, and amino groups as taught by.



Clearly, these are basic functional groups, which are common in most organic molecules and are well known in the basic chemical arts. Accordingly, teaching that these groups may simply be present is teaching very little about how to produce more complex and less common functional groups, nor does it make the presence or synthesis of more complex or less common

functional groups obvious. In contrast, examiner is directed the figure below which depicts the general structure of an alpha-hydroxi-hydroperoxide as described in Claim 53.

*α-Hydroxi-hydroperoxide*



Clearly, this functional group is not analogous to the functional groups depicted above, and one of ordinary skill in the art would not find a method obvious wherein **“ozonized lipids primarily comprise alpha-hydroxi-hydroperoxides,”** based on the elementary teachings cited in *Maggiolo II*. Furthermore, Applicants have reviewed *Maggiolo II* in detail, and cannot find any reference to alpha-hydroxi-hydroperoxides or the production thereof. Moreover, *Maggiolo*, and other cited references, fail to disclose a method wherein the **primary** product is an **alpha-hydroxi-hydroperoxide**.

Accordingly, for at least this reason, Claim 53 is not obvious in light of *Maggiolo II*, either alone or in combination with any other cited prior art. Applicants therefore respectfully request that this Claim, and any that depend therefrom, be allowed to issue.

**C. Prior art references fail to teach a quality control parameter wherein peroxide index is between about 1100 to 1200 units.**

The Office Action asserts that *Sechi* discloses a process having peroxide index indicators in the ranges of 500 and 800 mmol kg<sup>-1</sup> (page 280, Materials & Methods).” However, currently amended Claim 49 is directed to a method wherein a “quality control parameter comprises a peroxide index between about **1100 to 1200** units.” Although, *Sechi* may be construed to disclose a peroxide index indicator between about 500 and 800 mmol kg<sup>-1</sup>, it certainly does not disclose a peroxide index between about **1100 to 1200** units. Applicants have reviewed *Sechi* and other cited prior art and cannot find reference to quality control parameters within this range. Accordingly, for at least that reason, Claim 49 is not obvious in light of *Sechi*, either alone or combined with any other reference because the range of peroxide index between

about **1100 to 1200** is not disclosed, either explicitly or implicitly. Applicants therefore respectfully request that Claim 49, and any claims that depend therefrom, be allowed to issue.

**D. Prior art references fail to teach a reaction that occurs at 50°C.**

The Office Action asserts that “*Maggiolo* discloses a process for the ozonolysis of unsaturated fatty acids in the presence of water at controlled lower temperatures of **0 to 49°C** (see column 1, lines 20-25 & lines 69-70).” Additionally, the Office action further asserts that “*Beal* discloses the ozonization of vegetable oils in a water medium where ... reaction temperature is 75 to 100°F (**23.8 to 37°C**) (see column 2, lines 29-35 & lines 50-56).”

In contrast, new Claim 55 is directed to “method of Claim 35, wherein said temperature is 50°C.” Clearly, *Maggiolo* and *Beal*, as discussed by the Office Action, fail to teach a method wherein reaction temperature is above 49°C. Therefore, for at least that reason, Claim 55 is not obvious in light of *Maggiolo* and *Beal*, either alone or combined with each other or any other reference. Applicants therefore respectfully request that Claim 55, and any claims that depend therefrom, be allowed to issue.

**2. Claimed elements in combination are not analogous to separate elements in the prior art.**

The cited prior art is deficient such that it would preclude one of ordinary skill in the art from combining these references, and at the very least, combining them would prove unsuccessful. More specifically, these references are directed to such different reactions, reagents, and products that one of ordinary skill in the art would be unable to successfully combine the cited references “**in the way the claimed new invention does.**” *KSR*, 127 S.Ct. at 1741. Similarly, MPEP 2142 states that the claimed invention “**as a whole**” needs to be obvious to support a *prima facie* case of obviousness.

Amended Claim 35 is directed to a “method for obtaining **partially ozonized lipids** comprising: obtaining an **emulsion comprising water and a lipid** in a 1-50% relation by volume; passing a gas comprising ozone through said emulsion at a temperature about between 30-50°C, and having a gas flow per-hour rate to lipid volume ratio about between 100 and 500; and employing a quality control parameter including at least one of: peroxide index, acid index, aldehyde concentration, and viscosity.”

*Maggiolo*, for example, is directed to an entirely different type of reaction, which cannot be considered analogous to the method of Claim 35 “**as a whole**,” and in context, *Maggiolo* does not provide a sufficient disclosure to make the Claim 35 obvious. Specifically *Maggiolo* is directed to an **ozonolysis** reaction, whereas Claim 35 is directed to a “**partial ozonation**.” This is not a trivial distinction. Specifically, the reaction in Claim 35 relates to one which is characterized by a partial ozonization of a double bond. In other words, only one bond of a double bond is broken in the present reaction, whereas the reaction in *Maggiolo* breaks both bonds.

These elements are apparent in Claims 53 and 56, which teach a method “wherein said ozonized lipids primarily comprise **alpha-hydroxi-hydroperoxides**,” and a reaction “wherein the predominant pathway is **partial ozonation of a double bond** such that one bond of said double bond is broken.” One of ordinary skill in the art would not be successful in using *Maggiolo* to accomplish these elements, along with those in Claim 35.

Additionally, because the reaction performed in *Maggiolo* is **so different** from the method in Claim 35, it would be inappropriate for one of ordinary skill in the art to look to *Maggiolo* for guidance as to a method of Claim 35, and especially Claims 53 or 56. For example, *Maggiolo* relates to a reaction that employs an inert or non-polar solvent to dissolve fatty acids; whereas, the present Claim 35 is directed to a method wherein an emulsion comprises “water and a lipid.” New Claim 57 includes the element where the emulsion “consists of water and a lipid.”

Again, use of a polar compared to a non-polar solvent is not a trivial distinction. A reaction related to lipids dissolved in a non-polar solvent is entirely different from a reaction with an emulsion in a polar solvent. The products that are generated by such a reaction, and the reaction pathways, are certainly not analogous, and one of ordinary skill in the art would not find it obvious to use the same reaction condition from one reaction to another. For example, reaction temperatures used in *Maggiolo* would not relate to and would not be useful when determining reaction temperatures of a reaction with an “emulsion of water and lipid”

Accordingly, Claim 35 would not be obvious in light of *Maggiolo* alone or in combination with other references, because the reaction disclosed in *Maggiolo* is so different than the methods disclosed in the other references and the methods disclosed in Claim 35. Further, Claims 55 and 58 would also be non-obvious along with all other claims that depend from Claim 35.

*Beal* also teaches and relates to a method that is not analogous to the method disclosed in the present claims. For example, *Beal*, like *Maggiolo*, relates to a complete ozonolysis of the



reagents, which is characterized by breaking both bonds of a double bond in reagents. In contrast, Claim 35 is directed to a **partial ozonization**, and Claims 53 and 56 are directed to a method “wherein said ozonized lipids primarily comprise **alpha-hydroxi-hydroperoxides**,” and a reaction “wherein the predominant pathway is **partial ozonation of a double bond** such that one bond of said double bond is broken.”

Given that *Beal* and *Maggiolo* relate to entirely different reactions, one of ordinary skill in the art would not be able to successfully combine these teachings to reach the method as claimed herein, nor would the method claimed herein be obvious to one of ordinary skill in the art because these references are not analogous to each other or the presently claimed process.

Accordingly, because the Office Action references *Maggiolo* and *Beals* to suggest that temperatures of Claims 35, 55 and 58 are taught in the prior art, these temperatures would therefore not be obvious to one of ordinary skill in the art and are patentable in light of *Maggiolo* or *Beals*, either alone or in combination with each other or other references. Applicants respectfully request that Claims 35, 55, and 58 be allowed to issue along with claims depending therefrom.

Similarly, because the Office Action references *Maggiolo* and *Beals* to suggest that temperatures of Claims 35, 55 and 58 are taught in the prior art, these temperatures would therefore not be obvious to one of ordinary skill in the art and are patentable in light of *Maggiolo* or *Beals*, either alone or in combination with each other or other references. Applicants respectfully request that Claims 35, 55, and 58 be allowed to issue along with claims depending therefrom.

### 3. Office Action Fails to provide a valid motivation to combine

As discussed above MPEP § 2142 states that to state that KSR “identified a number of rationales to support a conclusion of obviousness” and that the “key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.” For example, the Examiner must show that some “**teaching, suggestion, or motivation in the prior art** that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.” *Id.*

The Office Action states that “the motivation for the process is the fact that researchers have been driven to study the antimicrobial agent from essential oils,” which is a rationale taken from a single reference, namely *Sechi*. This cited motivation cited by the Office Action fails to address why one of ordinary skill in the art would “**combine reference teachings**” or “**modify**” any cited reference. Instead, this simply provides a motivation to identify antimicrobial agents generally, but fails to provide any suggestion why the reference teachings should or would be combined. Moreover, this fail to address why one of ordinary skill in the art would combine the prior art references to reach the claimed invention “**as a whole**.”

In fact, one having ordinary skill in the art would not be motivated to combine or modify these references because they relate to different reactions and different reactants. Moreover, few or these references relate in any way to “antimicrobial agents from essential oils.”

While a plain reading of these references may appear to disclose some claimed elements, a close look reveals that the cited elements are merely pulled from a variety of non-analogous reactions. Accordingly, the Office Action fails to cite a valid motivation to combine the references to reach the claimed invention, and more specifically to reach the claimed invention as a whole. Therefore, for at least this reason, Applicants respectfully assert that a *prima facie* case of obviousness has not been established, and that the rejection of the present claims be withdrawn and the present claims be allowed to issue.

### CONCLUSION

For at least the reasons above, Applicants respectfully submit that all pending claims are allowable and request that the Examiner permit these claims to proceed to issuance. Although additional arguments are believed to exist for distinguishing the cited documents, the arguments presented are believed sufficient to address the Examiner's rejections. Likewise, failure of the Applicants to respond to a position taken by the Examiner is not an indication of acceptance or acquiescence of the Examiner's position. Instead, it is believed that the Examiner's positions are rendered moot by the foregoing arguments, and it is therefore not believed necessary to respond to every position taken by the Examiner with which Applicants do not agree.

The Examiner is respectfully requested to contact the undersigned at the telephone number below if there are any remaining questions regarding this application.

We believe the appropriate fees accompany this transmission. If, however, insufficient fee payment or fee overpayment occurs, the amount may be withdrawn or deposited from/to AXIOS Law Group's deposit account. The deposit account number is 50-4051.

Respectfully submitted,  
AXIOS LAW GROUP

Date: August 3, 2009

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